

# SEVERE LOCAL STORM WARNING SERVICE

## AND TORNADO STATISTICS, 1953-1976







## SEVERE LOCAL STORM WARNING SERVICE

**Severe local storms** are tornadoes, and severe thunderstorms which are accompanied by very strong winds. (More than 58 miles per hour—93 kilometers per hour) or large hail ( $\frac{3}{4}$  inch—1.9 centimeters diameter or larger). Heavy rainfall and dangerous lightning may also be associated with these storms. They are small, short lived and the most difficult weather phenomena to forecast precisely. Even so, it is possible to predict general areas where severe thunderstorms and tornadoes **are most likely to occur**.

This very important forecasting function is performed at the National Severe Storms Forecast Center (NSSFC) in Kansas City, Missouri. This facility is operated by the National Weather Service, a major element of NOAA, the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce. The NSSFC meteorologists monitor conditions in the North American atmosphere, using surface data from hundreds of locations, radar information, satel-

lite photographs, meteorological upper-air profiles (obtained from sounding balloons) and reports from pilots. From these thousands of pieces of information, forecasters determine the area(s) in which severe local storms are most likely to occur. Information on the area(s) is then issued to National Weather Service offices and to the public in the form of a watch bulletin.

**The severe thunderstorm watch or tornado watch bulletin** states approximately where and for how long the severe local storm threat will exist. It doesn't mean that severe local storms will not occur outside the watch area or time frame. **The watch is only an indication of where and when the probabilities are highest.** Watches are usually issued for areas about 140 miles (225 kilometers) wide by 200 miles (322 kilometers) long. Persons near the watch area should also be on the lookout for threatening conditions.

When designated forecast offices receive the Watch Bulletin, they prepare and issue redefining statements which specify the af-

ected area in terms of counties, towns, and locally well-known geographic landmarks. These statements are disseminated to the public by all possible means, and their primary use is to guide the activities of local government, law enforcement agencies, and severe local storm reporting networks in preparing for severe weather.

**Watches are not warnings.** A **watch** means severe thunderstorms or tornadoes are **possible**. During a watch situation, persons should watch for threatening weather and listen to NOAA Weather Radio, commercial radio, or television for further information.

Local National Weather Service offices will issue warnings whenever a severe thunderstorm or tornado has actually been sighted and reported in the area or indicated by radar. Warnings describe the "downstream" area that could be affected. This area is determined from the location, size, direction (which can be erratic) and speed of movement of the storm. Since tornadoes and severe thunderstorms are not always sighted or indicated by radar, **warnings may not always be given**. So persons should be on the lookout for the possibility of such storms whenever threatening conditions are approaching. If time permits, before taking shelter, notify the police.

When a warning is received, persons close to the storm should take cover immediately. Persons farther away from the storm should be prepared to take cover if threatening conditions are sighted. Even though a mobile home is tied down, persons living in them should seek substantial shelter elsewhere anytime threatening conditions are approaching.

Severe weather statements are prepared by local offices of the National Weather Service to keep the public and all other interests fully informed of all current information on severe local storms. Statements are issued at least once each hour, and more frequently when the severe weather situation is changing rapidly. In this way, the latest weather developments are made available to those who need them.

*Remember, severe thunderstorms and tornadoes can, and sometimes do, occur without either a watch or warning being issued.* This is particularly true of the smallest of these storms—the mini-tornado. In most cases watches and warnings are issued for the more dangerous medium- and maxi-tornadoes. However, it is nearly impossible to issue warnings with any reasonable degree of accuracy before a tornado is sighted or indicated by radar. Research efforts show promise for eventual issuance of warnings prior to occurrence of the tornadoes.



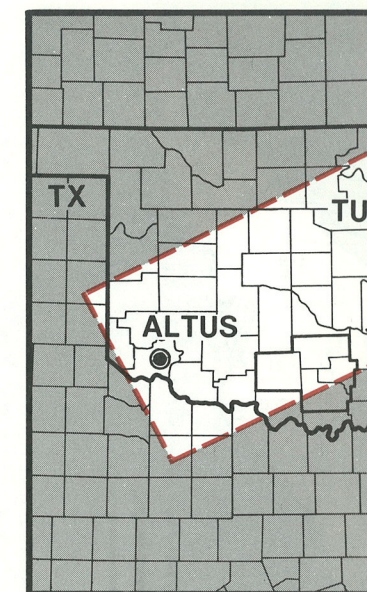
**THE MINI-TORNADO**  
Poor watch and warning chances  
To 100 feet wide  
To  $\frac{1}{2}$  mile long  
Lasts a few minutes  
Winds under 100 mph



**THE MEDIUM-TORNADO**  
Fair watch and warning chances  
To 400 feet wide  
To 10 miles long  
Lasts to 20 minutes  
Winds 100-150 mph



**THE MAXI-TORNADO**  
*Does most of the killing*  
Very good watch and warning chances  
To  $1\frac{1}{2}$  miles wide  
To 200 miles long  
Lasts to 3 hours  
Winds Greater than 150 mph



**BULLETIN — IMMEDIATE REQUESTED**  
**TORNADO WATCH NUMBER 1**  
**NATIONAL WEATHER SERVICE**

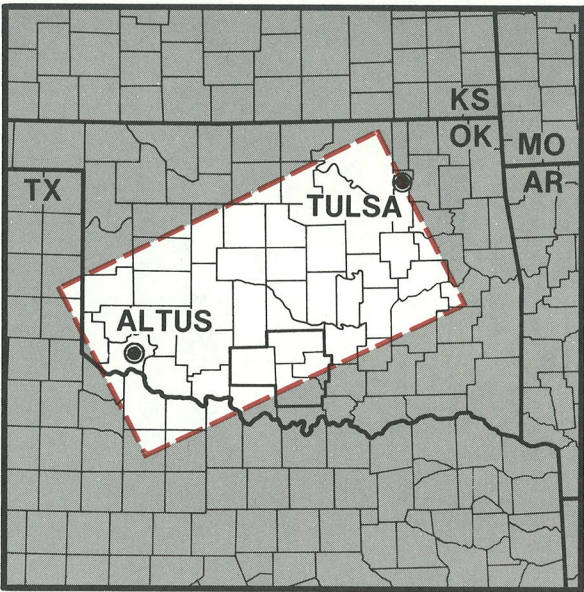
235 PM CST MON APR 19

A . . . THE NATIONAL SEVERE STORMS FORECAST CENTER SAYS THE POSSIBILITY OF TORNADOES, THUNDERSTORMS WITH LAR DAMAGING WINDS FOR MOS AND CENTRAL OKLAHOMA AND NORTH CENTRAL TEXAS UNTIL THIS MONDAY AFTERNOON THE WATCH AREA IS ALONG MILES EITHER SIDE OF A MILES SOUTHWEST OF ALTUS 30 MILES SOUTHEAST OF REMEMBER . . . A TORNADO THAT TORNADOES AND SEVERE ARE POSSIBLE IN AND CLOSE AREA. PERSONS IN THESE ON THE LOOKOUT FOR THREATENING CONDITIONS AND LISTEN TO WEATHER REPORTS AND POSSIBLE WAR

### KEY

- WATCH BULLETIN
- WARNING AREA
- WATCH REFERENCE POINT
- x TORNADO





BULLETIN — IMMEDIATE BROADCAST  
REQUESTED  
TORNADO WATCH NUMBER 107  
NATIONAL WEATHER SERVICE KANSAS CITY MO

235 PM CST MON APR 19 1976

A . . . THE NATIONAL SEVERE STORMS FORECAST CENTER SAYS THERE IS A POSSIBILITY OF TORNADOES AND SEVERE THUNDERSTORMS WITH LARGE HAIL AND DAMAGING WINDS FOR MOST OF SOUTHWEST AND CENTRAL OKLAHOMA AND A PART OF NORTH CENTRAL TEXAS UNTIL 930 PM CST THIS MONDAY AFTERNOON AND EVENING. THE WATCH AREA IS ALONG AND 70 STATUTE MILES EITHER SIDE OF A LINE FROM 30 MILES SOUTHWEST OF ALTUS OKLAHOMA TO 30 MILES SOUTHEAST OF TULSA OKLAHOMA. REMEMBER . . . A TORNADO WATCH MEANS THAT TORNADOES AND SEVERE THUNDERSTORMS ARE POSSIBLE IN AND CLOSE TO THE WATCH AREA. PERSONS IN THESE AREAS SHOULD BE ON THE LOOKOUT FOR THREATENING WEATHER CONDITIONS AND LISTEN FOR LATER STATEMENTS AND POSSIBLE WARNINGS.

KEY

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WATCH BOUNDARY

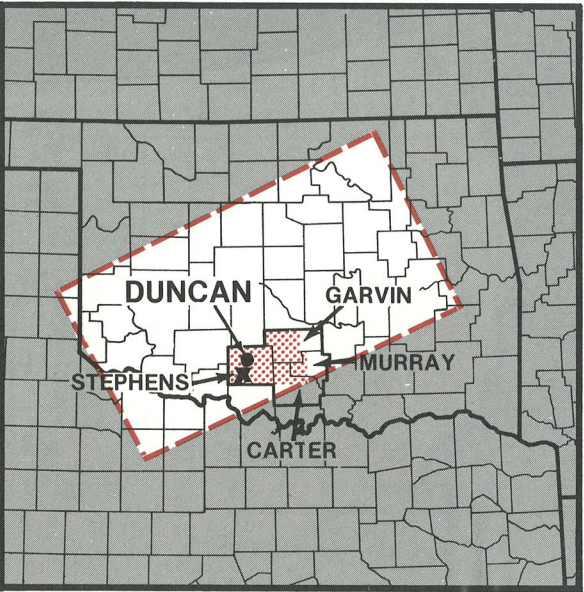
WARNING AREA

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WATCH REFERENCE POINT

X

TORNADO



BULLETIN — EBS ACTIVATION REQUESTED  
TORNADO WARNING  
NATIONAL WEATHER SERVICE OKLAHOMA CITY OK

350 PM CST MON APR 19 1976

THE NATIONAL WEATHER SERVICE HAS ISSUED A TORNADO WARNING EFFECTIVE UNTIL 450 PM CST FOR STEPHENS . . . NORTHERN CARTER . . . AND WESTERN GARVIN COUNTIES IN SOUTH CENTRAL OKLAHOMA. AT 350 PM CST RADAR INDICATED A POSSIBLE TORNADO 6 MILES SOUTHWEST OF DUNCAN OKLAHOMA MOVING TOWARD THE EAST NORTHEAST AT 40 MPH. IF THREATENING WEATHER APPROACHES YOU SHOULD GO TO A SAFE PLACE IMMEDIATELY. A TORNADO WATCH CONTINUES FOR MUCH OF CENTRAL AND SOUTHWEST OKLAHOMA UNTIL 930 PM CST.

BULLETIN  
SEVERE WEATHER STATEMENT  
NATIONAL WEATHER SERVICE OKLAHOMA CITY OK

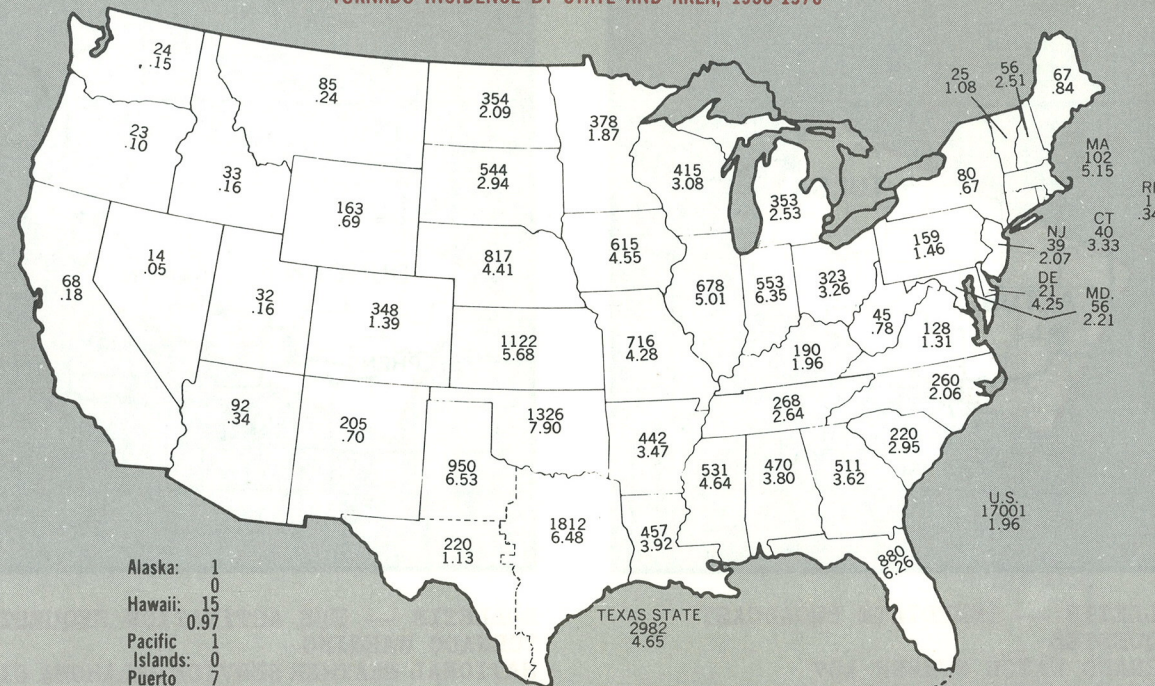
412 PM CST MON APR 19 1976

THE TORNADO WARNING FOR MURRAY . . . EASTERN STEPHENS . . . SOUTHERN GARVIN . . . AND NORTHERN CARTER COUNTIES IN SOUTH CENTRAL OKLAHOMA REMAINS IN EFFECT UNTIL 440 PM CST. AT 405 PM CST A TORNADO WAS REPORTED BY THE OKLAHOMA HIGHWAY PATROL 5 MILES SOUTH SOUTHEAST OF DUNCAN OKLAHOMA. THE TORNADO WAS MOVING TOWARD THE EAST AT ABOUT 30 MPH. POLICE REPORT CONSIDERABLE DAMAGE IN CENTRAL STEPHENS COUNTY . . . PEOPLE IN THE PATH OF THIS DANGEROUS STORM SHOULD TAKE SAFETY ACTIONS IMMEDIATELY.



# TORNADO STATISTICS (1953-1976)

TORNADO INCIDENCE BY STATE AND AREA, 1953-1976

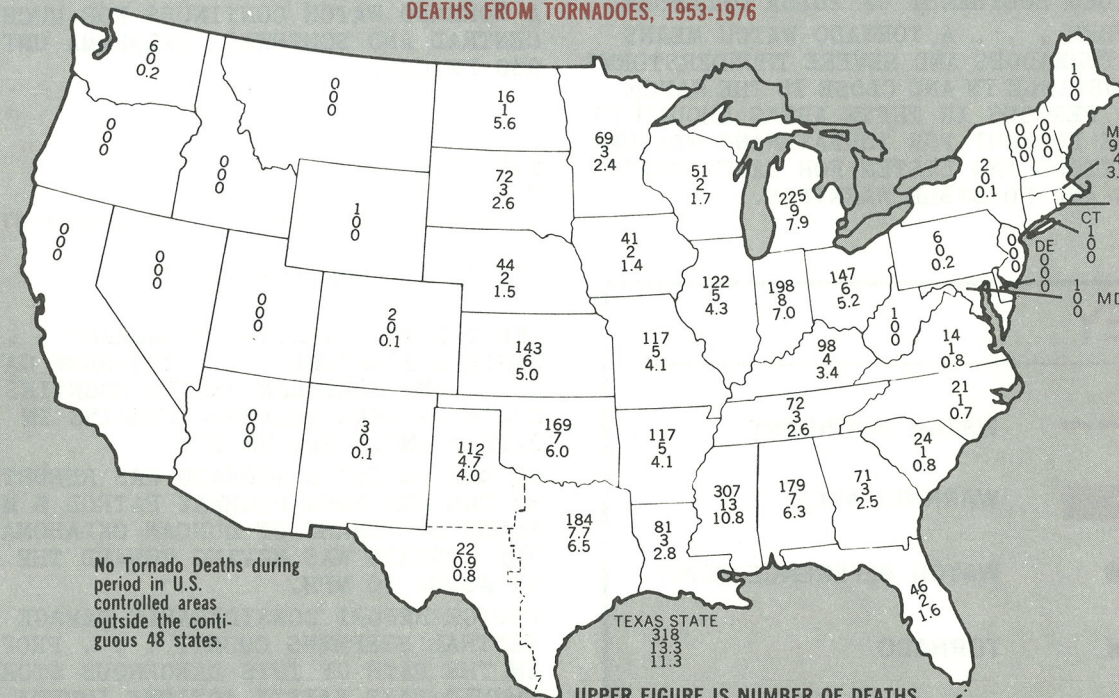


Alaska: 1  
Hawaii: 15  
Pacific Islands: 0  
Puerto Rico: 0.85  
Virgin Islands: 0

UPPER FIGURE IS NUMBER OF TORNADOES  
LOWER FIGURE IS MEAN ANNUAL NUMBER OF  
TORNADOES PER 10,000 SQUARE MILES

From 1953 through 1976, killer tornadoes occurred in 36 states with the maximum threat area east of the Continental Divide. They occurred in every month and during both day and night. The greatest potential for casualties from tornadoes is not necessarily where the greatest number of tornadoes occur, but where there is a high tornado incidence, a dense population, and many mobile homes or poorly constructed wood frame houses without basements. Mississippi with only 3.1 percent of the tornadoes and a moderate population density, has experienced the second greatest percentage (10.8) of the total tornado-related deaths. Oklahoma's 7.9 mean annual number of tornadoes per 10,000 square miles (25,900 square kilometers) is the highest.

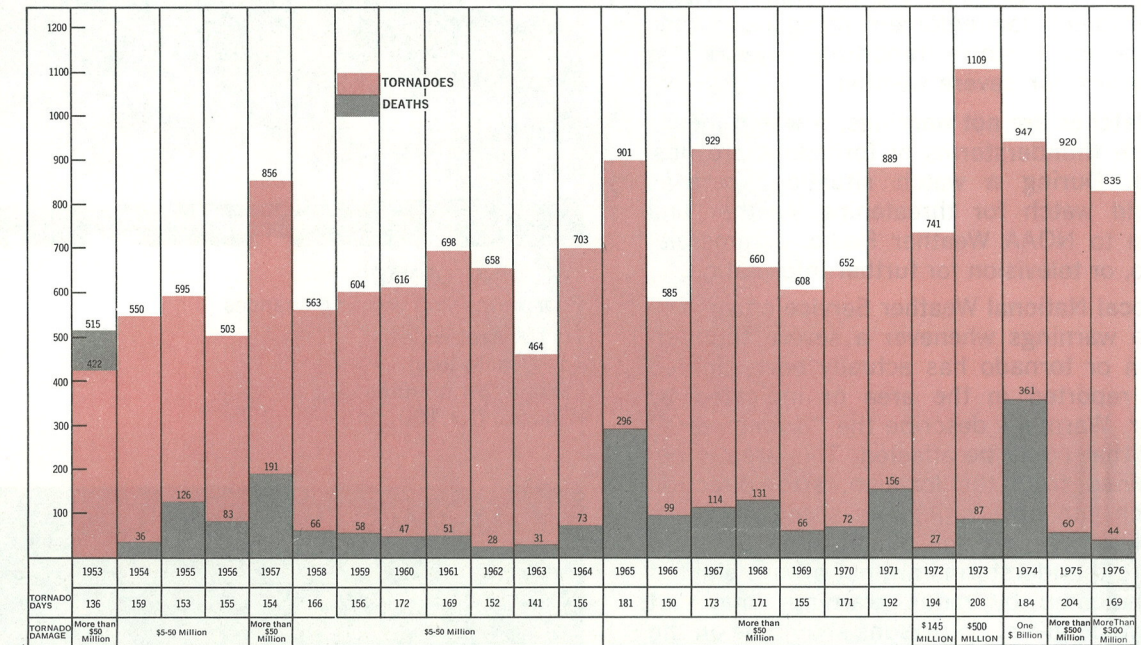
DEATHS FROM TORNADOES, 1953-1976



No Tornado Deaths during period in U.S. controlled areas outside the contiguous 48 states.

UPPER FIGURE IS NUMBER OF DEATHS  
MIDDLE FIGURE IS MEAN ANNUAL NUMBER OF DEATHS  
LOWER FIGURE IS % OF DEATHS

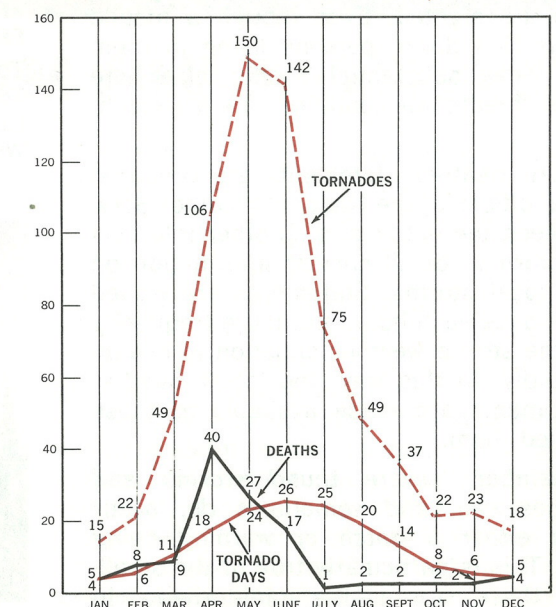
TORNADOES, DEATHS, TORNADO DAYS AND DAMAGE, 1953-1976



This publication summarizes tornado incidence for the period 1953-1976. During this period there was an average of 708 tornadoes and 117 tornado fatalities annually. Major contributors to the tornado and death totals were the 51 Palm Sunday tornadoes that killed 256 on April 11, 1965 and the 148 tornadoes that killed 307 in 13 states on April 3-4, 1974. The latter was the biggest outbreak in less than 24 hours on record, and caused 1974 to be the first year on record with property losses from tornadoes in excess of \$1 billion.

From 1916 through 1952, fewer than 300 tornadoes were reported in any one year. In 1953, the first full year the present warning system was used, more than 422 tornadoes were reported, beginning the first period of a more reliable statistical history. Since 1953, partly through improved equipment and forecast techniques and partly through increased public awareness and media participation, essentially complete tornado records are now becoming available.

TORNADO INCIDENCE BY MONTH, 1953-76



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration/National Weather Service

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